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1 Maps are courtesy WDFW. Project locations are from IAC-SRFB (PRISM), United States Forest Service, some Conservation Districts, some Regional Fisheries Enhancement Groups, and Bonneville Power Administration. Priority habitats are reported from regional recovery plans developed in 2004. Many projects outside priority areas were developed prior to adoption of recovery plans.

2 *The Washington Comprehensive Monitoring Strategy for Watershed Health and Salmon Recovery* (2002) recommends using the number of days annually during which minimum instream flows are met and the volume of water restored to streams where water availability and flows are limiting factors (as well as several other parameters) as indicators for our efforts to protect and restore rivers for salmon.

3 Instream flows are adopted into rule (Administrative Code) for a specific volume of water to be in the stream for a specific time, measured at a designated location. An instream flow is essentially a water right with the priority date being the date of the rule adoption. The instream flow would limit or constrain junior water rights (i.e. those water rights issued after the adoption date of the instream flow), but NOT senior water rights (those water rights issued before the adoption date of the instream flow).Instream flows are sometimes not met due to natural fluctuations in stream flow. Stream flow is the amount of water you would see in a stream if you went out and looked at the stream.

4 We have chosen the two months of most salmon returns for spawning (August 1 – September 30) to look at whether we are meeting the instream flow rules adopted by Ecology.

5 Water quality and quantity data reflect Department of Ecology information only. Many local governments, federal agencies, and tribal organizations also collect water information. At this time, the data are not correlated or compared with state information so we have not included them in the report. This is an area of monitoring where information certainly exists, and future documents should bring the important aspects together for a more comprehensive picture.

6 There are 73,886 miles of rivers and streams statewide, and 2,943 miles of marine estuaries. Approximately 4000 miles of streams were assessed, representing about 5% of the total, while only 3% or marine waters were. Washington has adopted a new approach to water quality assessment. The new method changes the number of assessed segments, so the number of Total Maximum Daily Load (TMDL) plans needed, or completed may not correspond to previous reports. The latest comprehensive assessment included over 30,000 assessed segments, compared to 2,362 segments in the 2004 State of Salmon Report. This results in an increased number of plans needed.

Categories used for basin water quality measure:

- **Clean up plans needed.** These are polluted waters that require a TMDL and are part of the traditional 303(d) list of impaired water bodies. Placement in this category means that Ecology has data showing that the water quality standards have been violated for one or more pollutants and there is no TMDL or pollution control plan.
- **Clean up plans completed or underway.** These include waters that have pollution problems that are being solved either through a TMDL that is actively being implemented, or a pollution control plan that is expected to solve the problems, or waters that are impaired by causes that cannot be addressed through a TMDL.

7 Fish information is from the Department of Fish and Wildlife. Where possible, data were verified and correlated with recovery plans. Recovery goals are from regional recovery plans submitted to NOAA-Fisheries. A status and trends monitoring request has been submitted to the Legislature for funding that will greatly enhance the accuracy of future reports.

8 Baselines are smolt (juveniles) production resulting from spawners from the pre-listing fisheries management and habitat conditions, if available. For ocean type Chinook, 1992-2000 for 1999 listings or through 1 year after listing year. For stream type Chinook, coho, and steelhead 1992-2001 for 1999 listings or 2 years after listing year.

9 Records kept for harvest management were used in this report, but they are not easily converted to useful measures of "fish in" abundance for watersheds. For example, steelhead harvest data are translated from "steelhead management units" to major population

groups or distinct population segments as much as possible, but conversion errors may exist because harvest management units are not necessarily coincident with recovery units. Many times data were available for certain populations but not the entire Major Population Group (MPG) or Evolutionarily Significant Unit (ESU). Unless otherwise noted, pre-listing and post-listing numbers are five-year averages.

10 All numbers are reported by Evolutionarily Significant Unit (ESU) or Major Population Group (MPG). NMFS considers an ESU a "species" under the Endangered Species Act. These are genetically distinct population groups that have evolved over time based on geography and other factors. For steelhead, this is known as a Distinct Population Segment (DPS). The term MPG is used to refer to groups of populations within an ESU that are geographically and genetically cohesive. These MPGs are a level of organization between independent populations and ESUs.

11 WDFW has undertaken summer chum supplementation and reintroduction programs in several streams using indigenous broodstocks to reduce short-term extinction risk to existing wild populations and to increase the likelihood of recovery. Supplementation programs began contributing to summer chum returns in 1995, prior to ESA-listing in 1999. In recent years, supplementation-origin fish have accounted for an average of 25% of returning adult summer chum. These supplementation-origin fish are treated no differently from natural-origin fish, meaning that they return to spawn in the wild, unlike returns to more traditional hatchery programs.

12 Data are not available to estimate BC and AK proportion of harvest

13 Chum spawners extrapolated from hatchery returns, 2003-2005 data only.

14 Chum harvest commercial fishery only—no recreational or tribal harvest.

15 Chum peak run counts only available; area under the curve used to convert peak run size to total run size. Prior to 2002 population was considered to be 100% wild; after 2002 about 10% is part of a supplementation program.

16 Chum smolt data are from Duncan Creek.

17 Steelhead smolt data are from Kalama River and Cedar Creek.

18 Coho total wild run size is preliminary data from WDFW and does not include Gorge MPG.

19 Coho recovery goal under development by Lower Columbia Fish Recovery Board and fish agencies.

20 The Middle Columbia steelhead Distinct Population Segment (DPS) is located in the middle Columbia Region, part of which (Yakima MPG) is covered by the Yakima Fish and Wildlife Recovery Board, and a second part that is in the Snake River Region and covered by the Snake River Salmon Recovery Board. NOAA-Fisheries is completing a recovery plan for the Klickitat MPG portion of the DPS, but goals and priority habitats were not available at publication time.

21 Smolt data include production from the upper Yakima, Tieton, Satus Creek and Toppenish populations.

22 Harvest data are not available on an MPG scale.

23 Data for steelhead are from Wenatchee River.

24 Smolt data for spring Chinook are calculated from Chiwawa River.

25 Although listed in Washington, Snake River sockeye are not resident and are not covered by this report.

26 Middle Columbia steelhead harvest data available only for Walla Walla MPG.

27 Spring Chinook harvest data not available for Asotin Creek and Washington portion of Wenaha River. Adult hydropower passage mortalities not included in Spring Chinook total run size.

28 Smolt data for spring Chinook, fall Chinook, and steelhead from the Tucannon River.

29 The University of Michigan's Ecosystem Management Initiative Evaluation Sourcebook notes it is possible for a circumstance to be both a threat and an asset. For example, funding if you have it is an asset and a threat if you don't.

30 Landsat data for WRIA 7 in Snohomish and King Counties were analyzed to estimate the amount of land converted from agriculture and forest lands into development and impervious surfaces. Urban and residential development increased from

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approximately 13,000 acres to almost 50,000 acres during 1972-2006. Most (74%) of the lands within the urban growth boundaries were developed by 2006. Over 80% of the developed landscape in 1972 was within the urban growth boundaries, whereas 44% of the developed landscape in 2006 was within the urban growth boundaries.

31 Material provided by Climate Impacts Group, Center for Science in the Earth System University of Washington. Citations for material available at http://www.governor.wa.gov/gsro/publications/default.htm.

32 Primary Fish Population: As identified in a recovery plan, this is a fish population that must achieve a low risk of extinction (i.e., a low risk of not meeting viability criteria).

33 Hatchery:

● Recovery plan complete and Hatchery Scientific Review Group or other scientific recommendations complete

◒ Recovery plan complete and can make qualitative assessment of progress towards recovery, but hatchery scientific review is underway but not complete

○ Recovery plan not complete and no scientific recommendations begun

NA No WDFW hatcheries

34 Harvest:

● ESA standards set, preseason targets estimated, and data are available for a post- season evaluation

◒ ESA standards set, preseason targets estimated but data are insufficient for post- season evaluations and/or post-season evaluations based on logical surrogates

◔ ESA standards set but significant harvest components assignable only by applying harvest data across multiple ESUs/DPSs/MPGs

○ ESA standard not set or measured or production negligible

35 Hydropower:

● Passage goals at FERC-license projects are established and annually monitored and reported

◒ Passage goals at FERC-licensed projects are set and some data are available, but not assessed against goals

○ No passage goals established, no monitoring done

NA No FERC-licensed projects

36 Water Quantity:

● Gages exist in the watershed and are monitored

○ No gages in the watershed

37 Water Quality:

● Some long- and short-term stations are monitored in the watershed

○ No long-term stations present, some short term are monitored

38 Juvenile Fish Production:

● Smolt monitoring sufficient to estimate juvenile production

◒ Smolt monitoring insufficient to estimate juvenile production

○ No smolt monitoring

NA No need to do monitoring

39 Barriers Surveyed:

◒ We have some knowledge of major blockages from data contained in the FPDSI and WDFW databases delineated from known, presumed, and potential habitat layers as of 08/06.

40 Miles of Anadromous Waters Inaccessible:

◒ Some estimates have been made in recovery plans, but most data are still under development

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Moving Washington Forward

STATE OF SALMON IN WATERSHEDS 2006

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